

NAME:

DATE:

p1020: graded take-home open-note practice exam (version 215)**Question 1**

Let f represent a function. If $f[3] = 4$, then there exists a knowable solution to the equation below.

$$y = 20 \cdot f\left[\frac{x}{2} - 18\right] - 44$$

Find the solution.

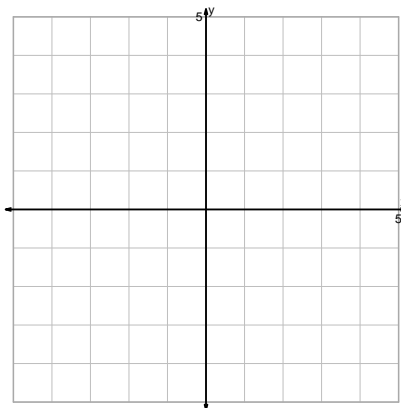
$$x =$$

$$y =$$

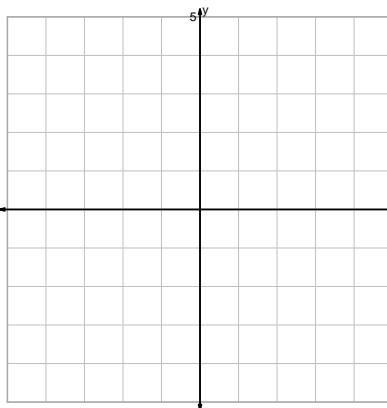
Question 2

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.

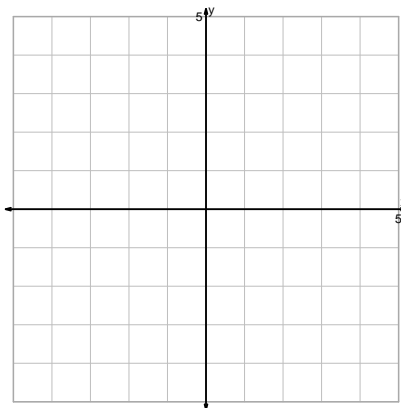
$$y = \sqrt[3]{2x}$$



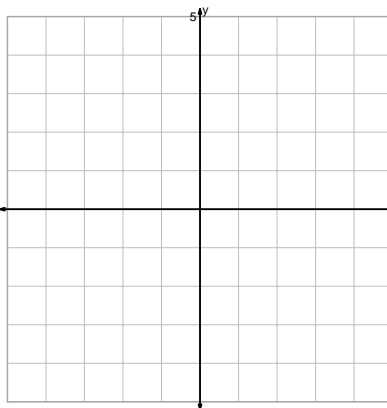
$$y = \log_2(x+2)$$



$$y = \frac{x^2}{2}$$

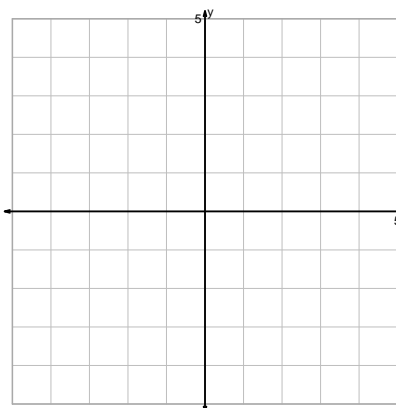


$$y = \left(\frac{x}{2}\right)^3$$

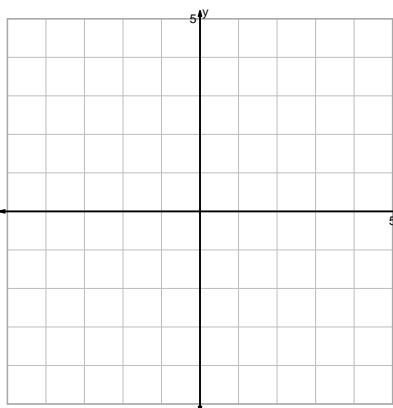


Question 2 continued...

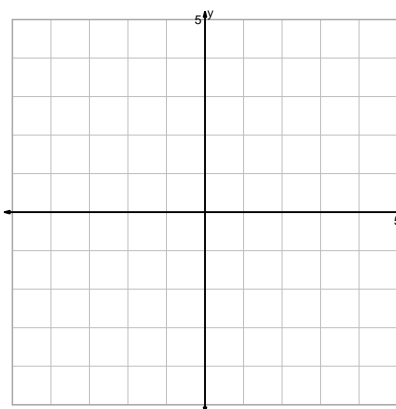
$$y = \sqrt[3]{x} + 2$$



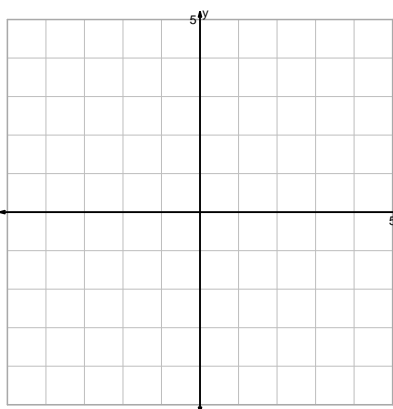
$$y = 2^{-x}$$



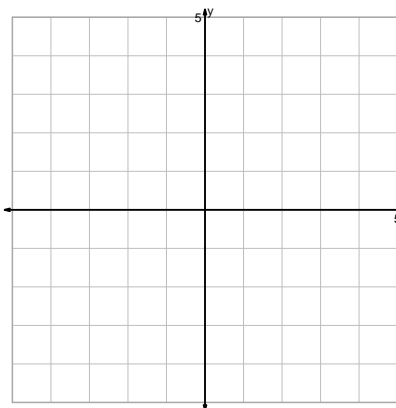
$$y = 2 \cdot 2^x$$



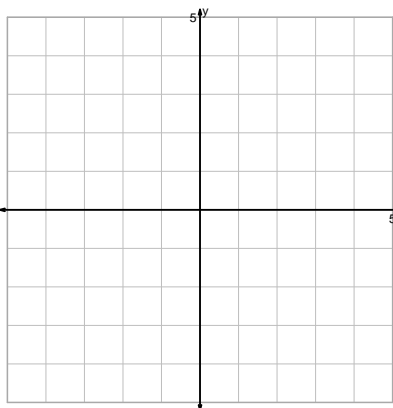
$$y = x^2 - 2$$



$$y = \sqrt{x-2}$$

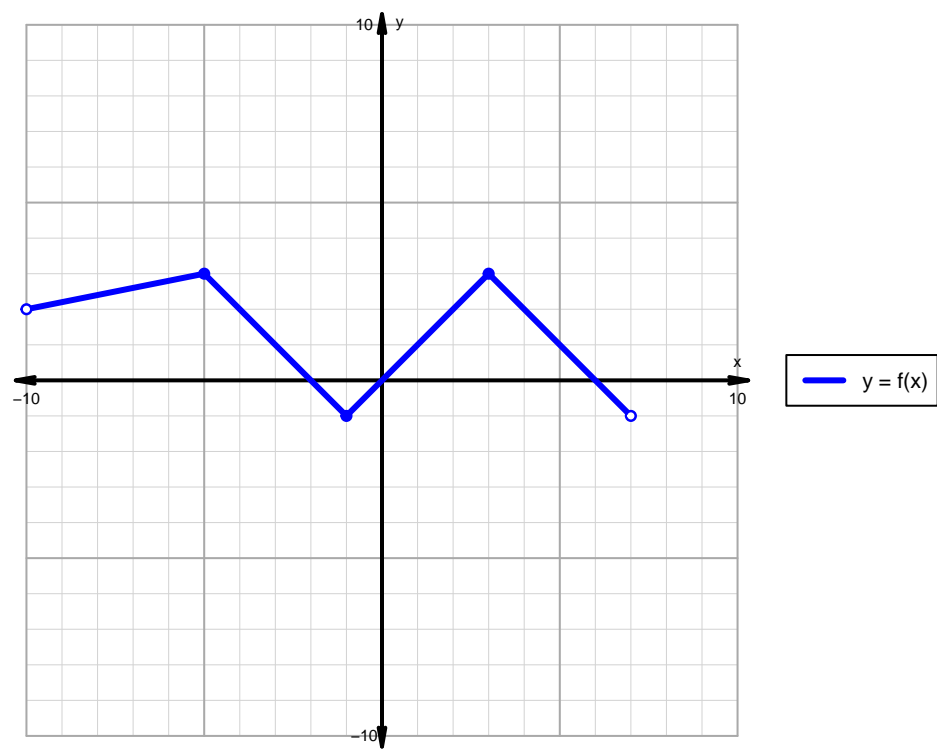


$$y = -\sqrt{x}$$



Question 3

A function is graphed below.



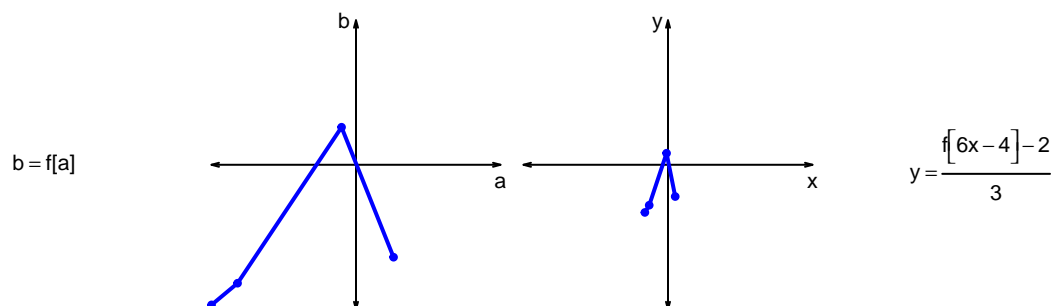
Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4

Let f represent a function. The curves $b = f[a]$ and $y = \frac{f[6x-4]-2}{3}$ are represented below in a table and on graphs.

a	b	x	y
-100	-97	-16	-33
-82	-82	-13	-28
-10	26	-1	8
26	-64	5	-22



- Write formulas for calculating x from a and calculating y from b . (Or, write the coordinate transformation formula.)
- What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = \frac{f[6x-4]-2}{3}$?

Question 5

A parent square-root function is transformed in the following ways:

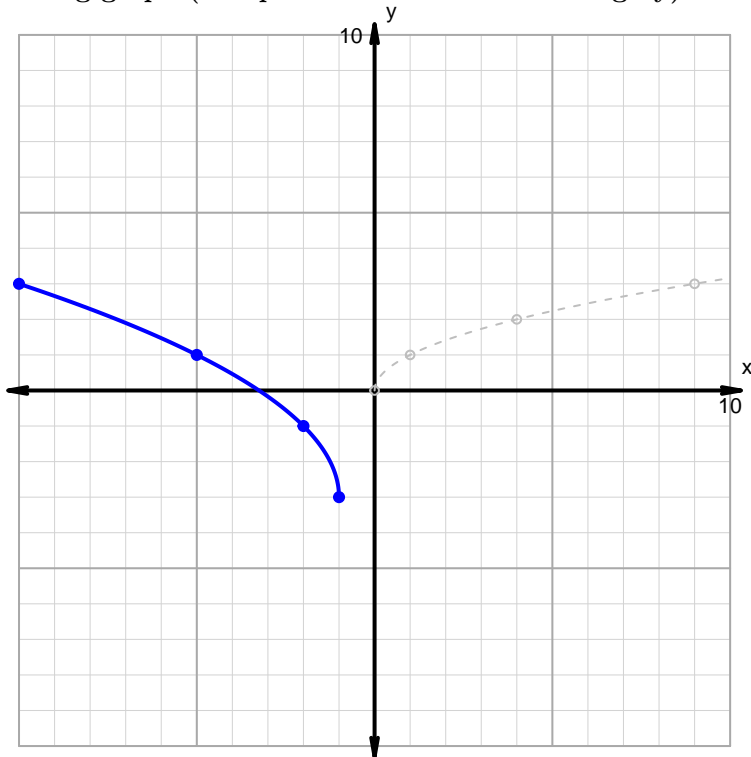
Horizontal transformations

1. Translate right by distance 1.
2. Horizontal reflection over y axis.

Vertical transformations

1. Vertical stretch by factor 2.
2. Translate down by distance 3.

Resulting graph (and parent function in dashed grey):



- What is the equation for the curve shown above?

Question 6

Make an accurate graph, and describe locations of features.

$$y = \frac{1}{2} \cdot |x + 1| - 3$$



Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	